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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/611,896	07/03/2003	Yu-Chou Lee	MR3029-77	3708

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EXAMINER

TRAN, THIEN F

ART UNIT PAPER NUMBER

2811

DATE MAILED: 05/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/611,896

Applicant(s)

LEE ET AL.

Examiner

Thien F. Tran

Art Unit

2811

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 April 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9-15 is/are allowed.
- 6) ☒ Claim(s) 1-5 and 7 is/are rejected.
- 7) ☒ Claim(s) 6 and 8 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 04/01/2005 has been entered.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 5 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Yaegashi et al. (USPN 6,376,861).

Yaegashi et al. discloses the claimed thin-film transistor structure (Fig. 1) comprising: an insulating substrate 10; a gate electrode 18 on said insulating substrate; a dielectric layer 20 over said gate electrode; a first semiconductive layer 22 on said dielectric layer; a second semiconductive layer 26 on said first semiconductive layer; a first conductive layer 30 on said second semiconductive layer; a second conductive layer 32 on said first conductive layer, said second conductive layer is used as a source 36a and a drain 36b; a third conductive layer 34 on said second conductive layer; and

an opening through said second semiconductive layer, said first conductive layer, said second conductive layer and said third conductive layer and exposing said first semiconductive layer.

Regarding claim 2, Yaegashi et al. further discloses said gate electrode 18 comprising an AlNd gate electrode 12.

Regarding claim 3, Yaegashi et al. further discloses said dielectric layer 20 comprising a silicon nitride layer.

Regarding claim 5, Yaegashi et al. further discloses said second semiconductive layer 26 comprises an N-type amorphous silicon layer.

Regarding claim 7, Yaegashi et al. further disclose said third conductive layer 34 formed of Mo containing Ta wherein Mo and Ta are known materials routinely used for a glue (adhesive) layer in semiconductor devices. The third conductive layer 34 of Mo containing Ta has a different etching rate from the second conductive layer 32 of Mo containing nitrogen. Therefore, it is inherent that the third conductive layer 34 is capable of performing as a glue layer and an etch stop layer to protect said second conductive layer 32 from being over-etched.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yaegashi et al. (USPN 6,376,861) in view of Hayama (USPN 5,416,341).

Yaegashi et al. as described above further discloses the first semiconductor layer 22 comprising an amorphous silicon layer. Yaegashi et al. does not expressly disclose the amorphous silicon layer 22 being a hydrogenated amorphous silicon layer. Hayama discloses thin film transistors comprising a hydrogenated amorphous silicon active layer. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to form the amorphous silicon layer 22 of a hydrogenated amorphous silicon layer as taught by Hayama in order to have low leakage current between the source and drain regions.

Allowable Subject Matter

Claims 9-15 are allowed.

Claims 6 and 8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: prior art references do not teach or render obvious a thin film transistor structure comprising a first conductive layer, a second conductive layer and a third conductive layer, wherein the first, the second and the third conductive layers are made of alloy layers having at least one common metal and the first conductive layer prevents the second conductive layer and the second semiconductive layer from diffusing into each other.

Prior art references do not teach or render obvious a thin film transistor structure comprising a first conductive layer, a second conductive layer and a third conductive layer, wherein the first conductive layer, the second conductive layer and the third conductive layer comprise a sandwich structure of AlNdN, AlNd and AlNdN alloys.

Prior art references do not teach or render obvious a thin film transistor structure comprising an AlNd alloy layer on the first AlNdN alloy layer and a second AlNdN layer on the AlNd alloy layer.

Prior art references do not teach or render obvious a thin film transistor structure comprising an AlNd alloy layer on the first conductive layer and a second conductive layer on the AlNd alloy layer, wherein the first and second conductive layers are made of aluminum-based alloy layers.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thien F. Tran whose telephone number is (571) 272-1665. The examiner can normally be reached on 8:30AM - 5:00PM Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C. Lee can be reached on (571) 272-1732. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2811

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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May 4, 2005


THIENTRAN
PRIMARY EXAMINER